REMARKS/ARGUMENTS

The present application has been rejected for reasons given below, all of which are traversed. Claims 1, 10, 13, 23, 24, and 29 have been amended to define the claimed thermally developable compositions, photothermographic materials, and imaging methods as "aqueous-based" and "black-and-white" image-forming. These claimed compositions, materials, and methods are not described or suggested in the cited art. These amendments are supported by the original disclosure and claims (e.g. amended Claim 8 and cancelled Claim 12).

The specification has been amended to update the status of several cited patent applications that were copending at the time of filing this application.

The enclosed **Rule 132 Declaration** by co-Applicant James Philip, Jr. is present in support of Applicants' arguments as described below.

Rejection Under 35 U.S.C. §103

Claims 1-31 have been rejected as unpatentable over U.S. Patent 6,440,649 (Simpson et al.) or 6,573,033 (Simpson et al.) in view of FR 1,542,505 (Ohkubo et al., or "Masuta" in the Office Action) and JP 02-048659 (Taguchi). As far as is applies to claims presently in this application, this rejection is respectfully traversed.

The Office Action alleges that either Simpson et al. patent describes X-radiation sensitive photothermographic materials containing phosphors that are known as "dry silver" materials further comprising a photosensitive catalyst, non-photosensitive source of reducible silver ions, reducing composition, and a hydrophobic or hydrophilic binder. Various silver salts are described and a wide variety of reducing agents are described for use with them. The Office Action alleges the usefulness of fluorescent intensifying screens with the photothermographic materials but fails to cite relevant prior art. The Office Action also admits that the Simpson et al. patents are silent as to Applicants' specific ascorbic acid derivatives as reducing agents.

"Masuta" (Ohkubo et al.) is cited as teaching photothermographic films containing silver benzotriazole and a "reducing agent meeting the instant claim limitations". The Office Action (page 4) errs in stating that "Masuta" anticipates the claimed invention.

Taguchi is cited for disclosing a thermally developable photosensitive material comprising a silver halide, a dye/reducing agent that meets the instant claim limitations, and a tetrazole compound.

The Office Action then sums up its arguments by stating that it would be obvious to one skilled in the art to prepare the material of either Simpson et al. patent with the ascorbic acid reducing agents of "Masuta" or Taguchi with a reasonable expectation of achieving a material with increased sensitivity/speed.

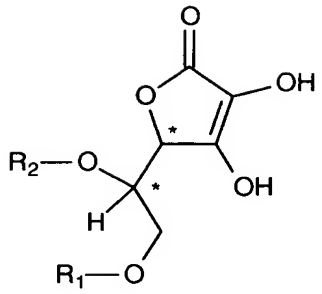
Applicants respectfully disagree with the rejection for a number of reasons. Before addressing the rejection, a brief description of the presently claimed invention is presented.

Applicants' Invention:

The reduction of the silver ions in silver benzotriazole to silver metal in photothermographic materials generally requires a relatively strong reducing agent. A typical developer choice is ascorbic acid that has been shown to provide useful photospeed, adequate Dmax, and low Dmin. Derivatives (such as esters) of ascorbic acid have also been described in the art as reducing agents for silver ions in organic silver salts. For example, ascorbic acid palmitate, dipalmitate, stearate, myristate, and laurate are described in the art for this purpose.

However, since these compounds have been disadvantageous for one reason or another, there has been continuing work in the art to develop thermally developable materials using silver benzotriazole, other organic silver salts, and other strong reducing agents. Because some imaging systems include components that may lead to image instability, especially in aqueous-based imaging materials, there has also been a continuing need to find the most suitable silver ion reducing agents to improve post-processing light stability of the imaged materials.

Applicants have found that specific reducing agents provide improved post-processing print stability of images in aqueous-based, thermally developable compositions and materials containing silver salts such as silver benzotriazole. These reducing agents are compound represented by the following Structure (I):



(I)

wherein R_1 and R_2 are independently hydrogen or an acyl group having 11 or fewer carbon atoms, provided that at least one of R_1 and R_2 is an acyl group.

Applicants have demonstrated that these compounds provide improved results over the use of ascorbic acid (see Applicants Examples 1 and 2, pages 46-57 with data in TABLES III and IV). The data demonstrate an advantage especially for the improvement in post-processing print stability ("Light Box Test" in TABLE III and the reduced change in D_{min} shown in TABLE IV).

To demonstrate that the results from use of the ascorbic acid derivatives of Structure (I) are unexpected over the teaching of the prior art, Applicants tried to use a conventional ascorbic acid derivative, 1-ascorbyl palmitate in the same manner. The enclosed **Rule 132 Declaration** by co-Applicant James Philip, Jr. indicates that this compound could not be used in an aqueous-based thermally developable composition according to the present invention. This disadvantage is not apparent from the teaching in the art (especially "Masuta"). Thus, Applicants have found a unique class of ascorbic acid derivatives that are unexpectedly useful in the aqueous-based compositions and materials of the presently claimed invention to improve post-processing print stability.

Rebuttal of Rejection:

The primary references of Simpson et al. admittedly describe a number of the common features of photothermographic materials. However, as admitted by the Examiner, they fail to teach the critical ascorbic acid derivatives of the present invention as reducing agents. Moreover, it should be appreciated

that neither Simpson et al. reference is directed to the problem of improved "post-processing" print stability of the resulting black-and-white images.

Applicants respectfully submit that neither "Masuta" nor Taguchi supplies the missing teaching. Moreover, the combined teaching fails to teach or suggest the presently claimed aqueous-based, black-and-white compositions and materials containing the critical ascorbic acid derivatives as reducing agents. The Office Action alleges that the combined teaching would suggest the claimed invention to improve sensitivity/speed, but this it not the problem addressed by the present invention.

Considering "Masuta" first, Applicant would respectfully point out that this reference fails to direct a skilled artisan to aqueous-based photothermographic materials and compositions. The only teaching about the formulations and binders is found in the Examples (TABLE 1) where polyvinyl butyral is noted as the binder and the formulation was prepared and coated out a methanolic solution. This is indicative of an organic-solvent based photothermographic material not an aqueous-based material.

More importantly, this reference mentions a number of higher alkyl ascorbic acid derivatives such as 1-ascorbyl palmitate for use as a reducing agent. As pointed out by Dr. Philip in his Rule 132 Declaration, this compound was not useful in the present invention. 1-Ascorbyl palmitate would not dissolve in water even when heated at 55°C and with application of sonic energy for one half hour. In contrast, when the same premix was prepared using a molar equivalent amount of 1-ascorbyl pivalate (Compound I-1 of the invention), complete dissolution occurred at 55°C with sonic energy. Additionally, 1-ascorbyl palmitate, would not dissolve in a mixture of 50% water and 50% methanol even when the mixture was heated at 40°C. In contrast 1-ascorbyl pivalate was soluble in such a mixture. Because of the unpredictable solubility of such chemical compounds, a skilled worker would not therefore be motivated by "Masuta" to use the specific class of reducing agents of Applicants' Structure (I).

Taguchi is no better for supplying the missing teaching. First of all, it is directed to "color" media. In view of the different chemistry and chemical mechanisms used for color and black-and-white imaging materials, one skilled in the art would not even consult Taguchi to solve a problem of light instability in black-and-white photothermographic images. The fact that

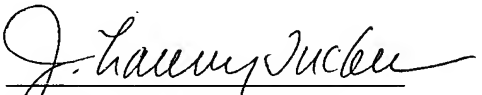
"dye/reducing agents" may be used in Taguchi is irrelevant because it fails to suggest Applicants' unique class of reducing agents to solve a post-processing print instability problem in black-and-white images.

Thus, the secondary references cited in the Office Action fail to direct or motivate a skilled artisan to use Applicants' unique class of reducing agents that solve the noted post-processing print instability problem in the photothermographic materials of the cited primary references.

Thus, it is believed that this rejection should be withdrawn.

In view of the foregoing amendments and remarks, reconsideration of this patent application is respectfully requested. A prompt and favorable action by the examiner is earnestly solicited.

Respectfully submitted,



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